

REMARKS/ARGUMENTS

The Office Action mailed December 10, 2004 has been reviewed and carefully considered. Claim 7 is canceled. Claims 1-6, 8-9, and 16-17 have been amended. Claims 1-6 and 8-24 are pending in this application, with claim 1 and 6 being the only independent claims. Reconsideration of the above-identified application, as herein amended and in view of the following remarks, is respectfully requested.

In the Office Action mailed December 10, 2004, the Examiner states that the Information Disclosure Statement IDS filed on July 2, 2001 does not include a concise explanation of relevance for DE 30 46 417 and DE 196 50 223. Attached hereto is a copy of the IDS filed on July 1, 2001. A concise explanation of the relevance of DE 30 46 417 and DE 196 50 223 is clearly stated in the last two paragraphs on page 2 of the IDS. Accordingly, it is respectfully requested that DE 30 46 417 and DE 196 50 223 be considered by the Examiner.

Claims 3-4 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite because the recitation on line 3 of claim 3, "said roll being measured and stored" should be changed to --said roll is measured and stored--.

Claims 1-2 and 6 stand rejected under 35 U.S.C. §102 as anticipated by U.S. Patent No. 6,108,436 (Jansen).

Claims 3-4 and 22-23 stand rejected under 35 U.S.C. §103 as unpatentable over Jansen in view of U.S. Patent No. 5,546,859 (Hern).

Claim 5 stands rejected under 35 U.S.C. §103 as unpatentable over Jansen in view of U.S. Patent No. 5,363,174 (Magde).

Claim 7-9 and 16 stand rejected under 35 U.S.C. §103 as unpatentable over Jansen in view of U.S. Patent No. 6,061,144 (Mamizuka).

Claims 10-15 stand rejected under 35 U.S.C. §103 as unpatentable over Jansen in view of Mamizuka and U.S. Patent No. 5,856,876 (Sasanuma).

Claims 17-21 stand rejected under 35 U.S.C. §103 as unpatentable over Jansen in view of Mamizuka and U.S. Patent No. 5,289,000 (Toyofuku).

Claim 24 stands rejected under 35 U.S.C. §103 as unpatentable over Jansen in view of Hern and Magde.

Before discussing the cited prior art and the Examiner's rejections of the claims in view of that art, a brief summary of the present invention is appropriate.

The present relates to a scanning device for optical density measurement and/or color or spectral measurement of at least one object arranged on a printing medium. According to the invention, a scanning apparatus 10 is used for densitometric measurement of a printing medium 13 which is transported by a roll 12 in a printing machine 11 during a printing process (page 7, lines 2-5). The scanning apparatus 10 includes an arrangement of measurement heads 14 mounted on a slide device 15 displacably mounted on a guide rail 16 (page 7, lines 5-9). A measurement object, i.e., measurement strip 17, is applied on the printing medium 13 for optical density measurement (page 7, lines 14-17). To initialize the scanning process 10, a position marker is arranged as a reference object 20, on the printing medium before and at a distance from the measurement strip 17, wherein the distance is in the transport direction (page 7, line 20 to page 8, line 4). When the position marker 20 is detected, a trigger signal is generated and transmitted to a control device 24 (page 8, line 4-9). The control device 24 triggers the scanning operation of the measurement heads 14 based on currently determined speed of the printing machine and the distance between the reference object and the measurement object (page 3, lines 15-21; and page 9, lines 17-18).

Independent claim 1 is amended to more clearly recite (1) that the at least one object comprises measurement strips which indicate optical density or spectral or color measurement of at least one object, (2) that the step of scanning is performed based on the detection of the reference object, and, (3) that the reference object is upstream of the measurement object relative to the direction of travel of the printing or paper web.

Jansen fails to disclose the above limitations. Jansen discloses a system for controlling registration of a web. According to Jansen, marks 21-26 are printed on a web, each of the marks being one of the colors of the print (col. 3, lines 38-41, and 51 of Jansen). The marks are arranged in pairs in a predetermined pattern (col. 3, lines 49-50). The marks are used to determine the mutual location of the colors and also the position of the print (col. 4, lines 25-31). One camera on each side of the web captures a picture of the pattern of marks (see recorded image 31 in Fig. 6). Jansen discloses that a picture is taken periodically based on pulse signals of an encoder 33 on the shaft of a cylinder and the predicted location of the marks (col. 5, lines 5-34). If the marks are not in the image, the system tries various offsets until the mark is recorded in the image (col. 5, starting at line 41).

Since Jansen discloses that the monitoring device is a location monitoring means, Jansen, fails to disclose scanning the at least one measurement object with at least one sensor and detecting information exhibited by the at least one measurement object, the information indicating at least one of optical density and color or spectral values, as expressly recited in amended independent claim 1. Since Jansen discloses that a trigger for the image recordation by the camera is based on signals from an encoder and since Jansen discloses that one of the recorded objects is selected as the reference object, Jansen also fails to disclose that the step of scanning is triggered based on detecting of the reference object on the printing medium, as recited in amended

independent claim 1. Since Jansen discloses that one of the recorded objects in the image is selected as the reference object, Jansen fails to disclose that the reference object is ahead of the measurement objects relative to the direction of travel, as now recited in amended independent claim 1.

For all of the above reasons, independent claim 1 is not anticipated by and is not obvious in view of Jansen.

Independent claim 6 is directed to a scanning apparatus and is amended to recite a sensor device having a plurality of measurement heads, wherein one of the measurement heads detects the reference object and the remainder of the measurement heads detect the at least one measurement object. Independent claim 6 is further amended to recite that the remainder of the measurement heads are arranged and dimensioned for detecting information from the at least measurement objects indicating one of optical density and/or color or spectral values of the at least one measurement object. Independent claim 6 also recites that the reference object is ahead of the measurement object on the printing or paper web.

As discussed above Jansen discloses determining relative locations of markings and therefore fails to teach or suggest sensor for measuring optical density or color or spectral values of the measurement object. Furthermore, Jansen discloses only one monitor on each side of the web. Accordingly Jansen fails to disclose plural measurement heads one measurement head for detecting the reference object and remainder measurement heads for scanning the measurement objects, wherein the reference object is ahead of the measurement objects. The Examiner states that Jansen discloses a plurality of measurement heads at Fig. 3; reference character 14; col. 4, lines 36-38; and col. 7, lines 14-16. This section of Jansen discloses a CCD camera with a plurality of pixels. Col. 7, lines 14-16 states that separate image recording means 14 could be used for monitoring mutual relation of colors and absolute location of the print on the web. Even if this is considered to disclose

a plurality of measurement heads, Jansen fails to teach or suggest one measurement head for detecting a reference object and remainder measurement heads for scanning the at least one measurement object, based on the detection of the reference object. In contrast, Jansen discloses that all scanning is performed based on encoder signals.

In view of the above amendments and remarks, amended independent claim 6 is allowable over Jansen.

Dependent claims 2-5 and 8-24, each being dependent on one of independent claims 1 and 6, are deemed allowable for at least the same reasons expressed above with respect to independent claims 1 and 6.

Dependent claim 2 is amended to state that the measurement heads moved transverse to the travel direction. Jansen teaches away from this at col. 6, lines 25-31. This limitation is also recited in dependent claims 19 and 20. The Examiner states that the limitations of claims 19 and 20 are obvious over Jansen in view of Mamizuka and Toyotuku. However, Jansen is related to obtaining an image with a camera and discloses that transverse movement is not required. Accordingly, there is no motivation to incorporate the features disclosed in Mamizuka and Toyofuku. Accordingly, claims 2 and 19-20 should be allowable for these additional reasons.

Dependent claim 23 recites that a current angle of a printing roll is detected when the reference object is detected and that the scanning is triggered after a further rotational movement of the printing roll past that detected angle is reached. The Examiner states that this limitation is obvious over Jansen in view of the Hern because Hern detects a gap and then performs an image processing. However, Jansen discloses that the scanning is performed periodically based on an encoder signal. Furthermore, Jansen relates to a web in which there is no gap to be detected.

Accordingly, there is no motivation for combining the features of Hern with Jansen. In view of the above remarks, dependent claim 23 is allowable over Jansen and Hern.

The application is now deemed to be in condition for allowance and notice to that effect is solicited.

It is believed that no fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,

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